

PATENT SPECIFICATION



397.057

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Corresponding applications in United Kingdom

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(One Complete Specification Left)

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Accepted: Aug. 17, 1933.

COMPLETE SPECIFICATION.

Improvements in and relating to the Filling and Sealing of Bottles and like Vessels.

We, SEITZ-WERKE G.M.B.H., of Bad Kreuznach, Rhineland, Germany, a German Company, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

A method and apparatus for filling and sealing vessels and particularly bottles in a manner free from germs are described and claimed in the specification of Patent No. 345,001. There it is particularly emphasised that in order to ensure a germ-free filling of the vessel, the closures must be rendered free from germs and fed to the closure machine in a germ-free manner. For this purpose, according to the main patent the closures (more particularly crown corks) after being presterilised in the supply drum and passing through the sorting device, are again thoroughly sterilised in the trough through which they are fed to the closure machine in that a sterilising liquid is sprayed through nozzles on to the inner surface of the crown cork which contains the cork disc applied to the top of the mouth of the bottle.

The present invention relates to certain further modifications and developments of the above method for sterilising the closure members.

It has been found that the sterilisation of the closures as described in the main patent is not always sufficient in continuous operation. In addition there is the disadvantage that, due to the preliminary sterilisation of the corks in the supply container by means of a liquid sterilising medium, the metal caps in which the cork discs are disposed are

readily attacked by the sterilising medium so that they rust and become unsightly, particularly in the case of sheet iron caps.

In order to overcome these disadvantages and according to one embodiment of the method of sterilising corks in accordance with the present invention, the corks in the supply container are treated with sterilising media in the form of gas or vapour and not with a liquid.

In order moreover that the sterilised corks should not become re-infected with germs on the path from the supply container to the closure machine, according to the invention all parts of the arrangement which come into contact with the corks are shut off from the outer air and further a stream of germicide gas or sterile air is passed continuously through the supply container as well as through the sorting drum and the feed channels for the corks. In addition on their path to the closure position the crown corks are sprayed on the inner side with a liquid disinfecting medium as in the main patent. In this way corrosion of the metal caps is prevented and accordingly a complete sterilisation and maintenance of the sterile condition of the crown corks is attained until they are positioned on the vessels which themselves are filled in a germ-free manner.

However in the method described above, it may occur that the disinfecting liquid sprayed onto the inner side of the crown corks and taken up by the corks on the path from the sterilising device to the closure machine, does not fully evaporate so that when the bottles are closed small quantities of the sterilising medium pass

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into the liquid filling the bottles. If, in consequence, the spraying of the corks with the liquid sterilising medium were omitted, then it might occur that the

sterilisation of the corks in the supply container alone by means of the sterilising medium in the form of gas or vapour would not in continuous operation be adequate to obtain completely sterile corks. In addition cardboard discs or similar closures are used at times instead of crown corks, in which case no liquid disinfecting medium can be used.

Now in order to obtain a complete sterilisation solely by means of the gaseous or vaporous disinfecting media, according to another embodiment of the sterilising method in accordance with the invention, it is also possible to proceed in such way that the sterilisation of the closure is carried through outside and prior to introduction into the supply container for the closures. In this way the germicide means may be caused to act on the closures for any desired length of time, so that in every case the requisite sterilisation is obtained.

Further in order to drive off the sterilising medium from the corks after the sterilisation, according to the invention the closures can be treated with sterile air in the supply container so that there is then no longer any risk of small quantities of the sterilising medium passing into the filled vessels which are to be closed.

In order however to prevent a new infection of the closures occurring on the path from the supply container to the closure machine, the closures which have been rendered free from germs must be directed along the said path through spaces which can be maintained free from germs by the introduction of sterile air.

In the drawing two embodiments of the arrangement by means of which the closures can be sterilised and fed to the closure machine in a manner free from germs are shown by way of example, and referring thereto:

Fig. 1 shows a sectional view of the sterilising device with the conduit feeding the closures to the closure machine,

Fig. 2 shows a front view of the supply container.

Figs. 3-5 show another embodiment of the sterilising device by means of which all kinds of closures such as natural corks, capsule closures, e.g., crown corks or aluminium cap closures or cardboard discs and the like can be sterilised and in particular

Fig. 3 shows a partial section through the sterilising device,

Fig. 4 shows a section through the

sterilising device on the line a-a of Fig. 3.

Fig. 5 shows a partial section through the supply container of the closures, the closure machine and the arrangement by means of which the cork discs are introduced into the shaped caps.

According to Figs. 1 and 2, the supply container 1 for the corks is provided in known manner with a sorting drum 3 driven by the shaft 2 from which the supply trough 4 leads to the arrangement 5 for closing the vessels. As in the arrangement according to the main application, nozzles 7 are provided at 6 from which a sterilising liquid is sprayed from the container 8 against the inside of the crown corks guided in the trough 4.

The supply container 1 is closed by means of a cover 9 which prevents the entry of outer air into the container. In order to enable the crown corks to be introduced into this container the cover 9 is provided with a small pivotal trap-cover 10 which has lateral walls which when closed pass through the aperture in the large cover 9 which is closed by this cover 10. In this way the supply container can be filled with the corks without considerable quantities of air passing in from the outside. The small cover operates to a certain extent as a lock for introducing the crown corks.

Provided on the container 1 are connections 11 and 12 Fig. 2 through which a germicide gas and sterile air can be introduced. These gases fill the entire space 1 and effect a thorough sterilisation of the crown corks which then is further increased by the spraying device 7, 8.

The sorting drum 3 and the feed trough 4 are provided on their front side with transparent covering strips 13 of the material known under the registered trade mark cellon for example, in order that the interior of these parts can conveniently be observed.

Sterilising gas is blown in through the connection 11 and sterile air through the connection 12. The germicide gas has the purpose of sterilising the corks whereas the supply of sterile air serves to prevent air from passing from the outside to the corks disposed in the container even when introducing new corks into the container by means of the trap 10.

In carrying out the sterilisation of the closures according to Figs. 3-5, the closures enclosed in packings of any suitable porous material are placed in a larger container of sheet metal, wood or the like which is adapted to be closed and there they are subjected to the action of the vapours of a sterilising medium,

such as formaldehyde vapours. Sacks of nettle, linen or cotton have been found to be very suitable as packings for receiving the closures. The closures, for example crown corks, are introduced into the sacks in numbers from 2000—3000, the sacks closed in the normal way and then 20 to 30 sacks are stacked together in the sterilising container in which the closures are subjected to the action of the sterilising medium.

The container for sterilising the closures consists of a cylindrical sheath 14, of sheet iron for example, with a cover 15 and a conical base 16 at the lower connection 17 of which is provided a retort 18 for receiving the disinfectant medium which is to be evaporated for example the paraformaldehyde. The contents of the retort 18 are vaporised by means of a spirit lamp 19 or the like positioned beneath it so that the formaldehyde vapours rise in the sterilising chamber and penetrate the sacks 20 which are stacked therein and which contain the closures.

After about 12—24 hours the closures are completely sterilised. Thereupon sterile air is blown into the sterilising container through a tap 21 in order to drive off the formaldehyde vapours which escape through the tap 22.

The closures sterilised in the manner specified are then transferred from the sacks into the supply container 24 which is adapted to be closed by a cover 23 and from which they are then fed through the conduit 25 to the closure machine 26.

In order to keep the corks in the supply container 24 in the sterile condition, sterile air or another sterile gas is passed through the container through the tap 27 already on introducing the closures so that no detrimental germs can penetrate into the container from the outside. After the closures have been introduced into the supply container the latter is closed in a germ-tight manner by means of the cover 23.

The method described above can also be used in machines in which the closures 28 are stamped continuously from a metal band of aluminium for example and the cork discs 29 serving as sealing discs are automatically inserted into the shaped closure caps in known manner by a separate device 30. In this case only the cork discs are sterilised in the steriliser 14 in the manner specified above and then are brought into the supply container 24 from which they are finally fed through the conduit 25 to the caps 28 coming through the feed trough 31.

In order to prevent the corks or other

closures becoming infected with germs on the path from the supply container to the closure machine, the channels through which the closures pass on their path to the closure position e.g., the channels 25, 32 and 53 are traversed by sterile air or another sterile gas. At the same time the sterile air can also be used for feeding the closures to the closure machine.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An improvement in or modification of the method for sterilising the closures of vessels, particularly crown corks, as described and claimed in the specification of Patent No. 345,001 wherein the closures in the supply container are disinfected with sterilising media in the form of vapour or gas and the inner surfaces of the closures are sprayed with a liquid disinfectant on the path from the supply container to the closure position.

2. A method for sterilising the closures of vessels as claimed in claim 1, wherein a stream of germicide gas and sterile air is passed continuously through the supply container, the sorting drum and the feed conduits.

3. A modification of the method claimed in claim 1, wherein the closures are first sterilised in porous packings such as sacks or the like which are subjected to the action of gaseous or vaporous disinfectants in closable containers whereupon the closures rendered free from germs are transferred from the packings into the supply container of the closure machine which is maintained free from germs by the introduction of sterile air or other sterile gas and the closures are then fed from the supply container to the closure machine through spaces which are maintained free from germs.

4. A method as claimed in claim 3, wherein the closures which are rendered free from germs are subjected to a stream of sterile air or other sterile gas on their path from the supply container to the closure position for the purpose of maintaining the freedom from germs.

5. An arrangement for carrying out the method as claimed in claim 1 or 2, wherein the supply and sterilisation container for the corks as well as the sorting device connected therewith and the feed channels through which the corks are directed to the closure machine are shut off from the outer air and are subjected to the action of a sterilising medium.

6. An arrangement as claimed in claim 5, in which the supply and sterilisation

container for the corks is provided with connections through which a disinfecting medium and a sterile gas can be introduced.

- 5 7. An arrangement for carrying out the method as claimed in claim 3 or 4, characterised by a container adapted to be closed on all sides and provided with a device for vaporising the disinfectant and
10 with connections for introducing sterile gas, the closures being subjected to the action of gaseous or vaporous disinfectants and subsequently to the action of sterile air while contained in packings in
15 the container and a supply container for the closures which is adapted to be closed

and is connected with the closure machine and which can itself be kept free from germs together with the feed conduits to the closure machine by the introduction 20 of sterile gas.

8. Methods and apparatus for the sterilisation of the closures of vessels substantially as described with reference to or as shown in the accompanying 25 drawings.

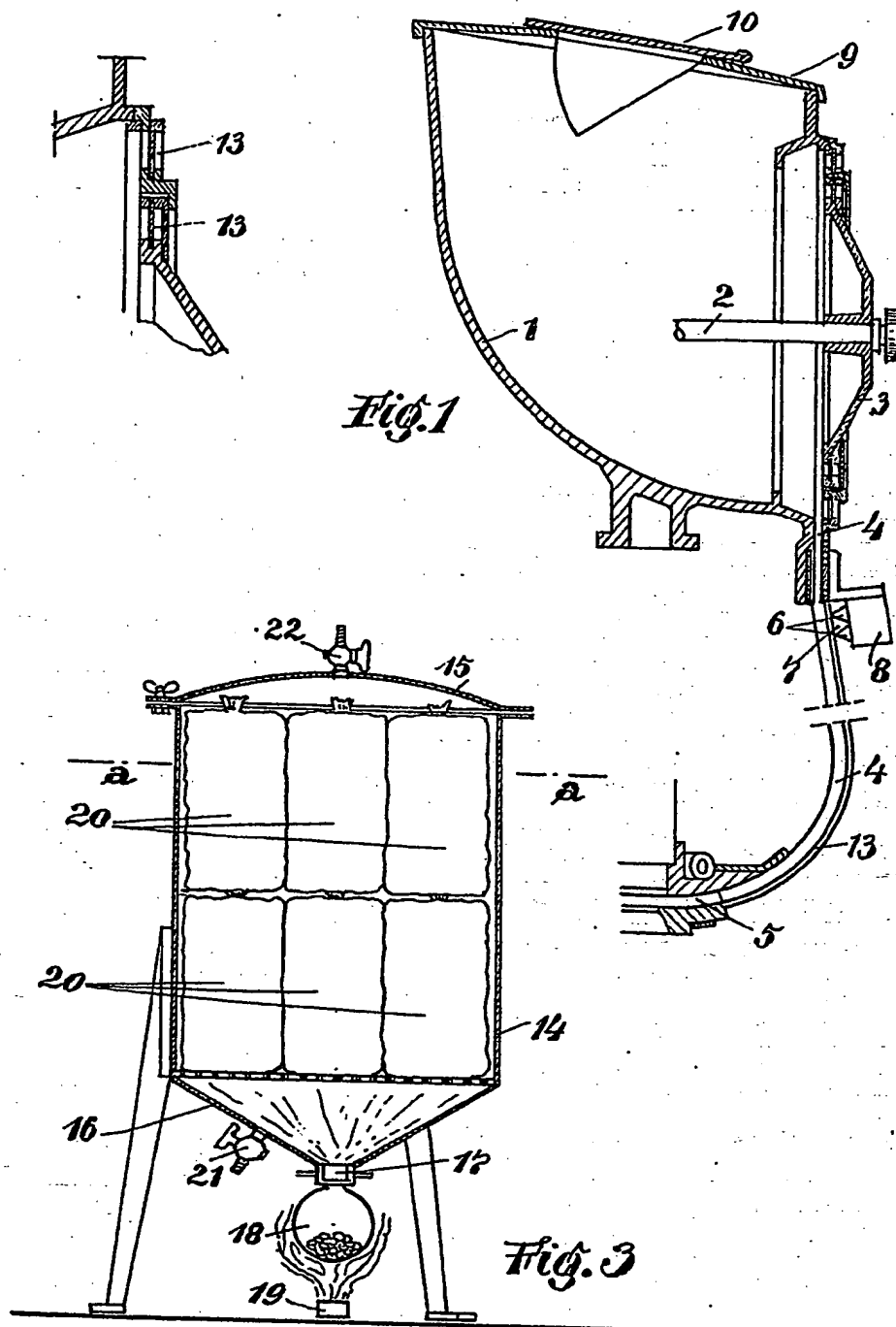
Dated the 21st day of March, 1933.

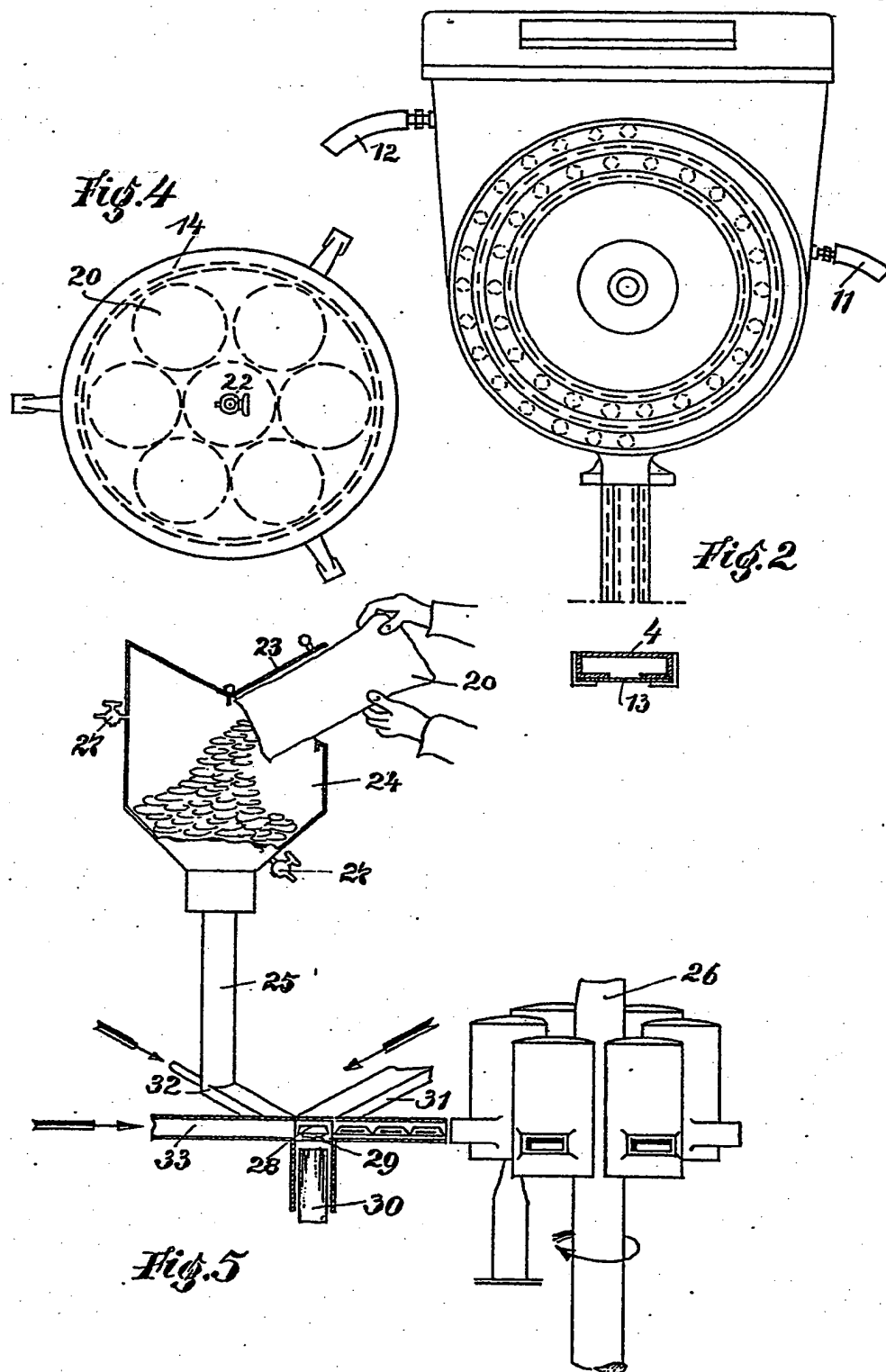
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397,057 COMPLETE SPECIFICATION

SHEET 1

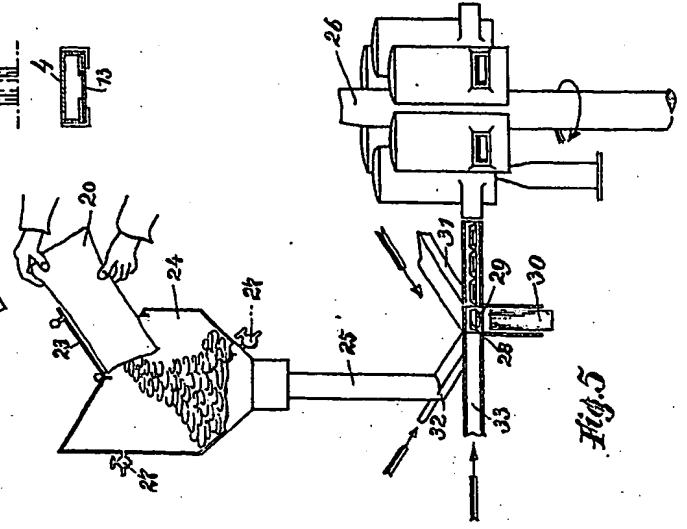
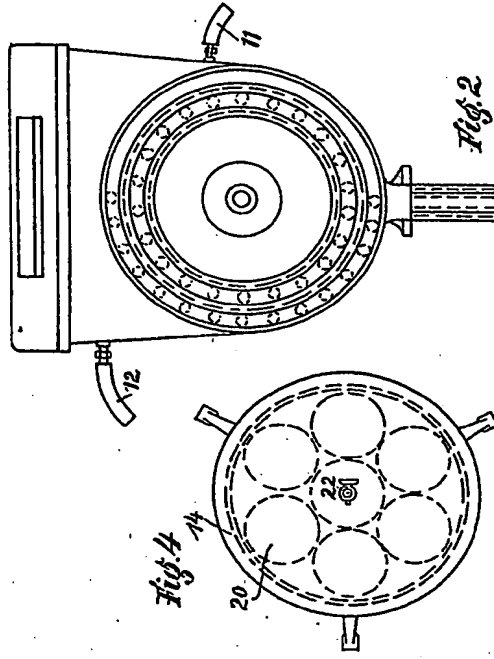
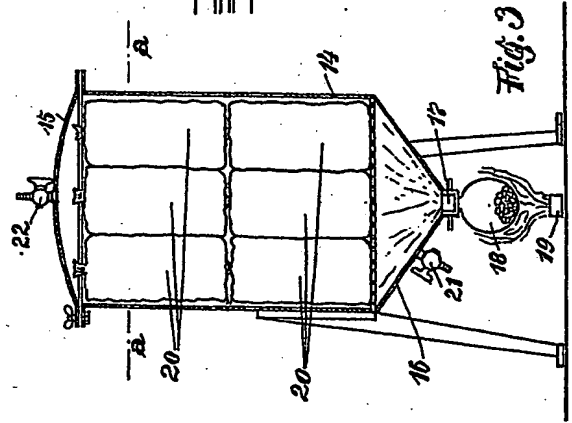
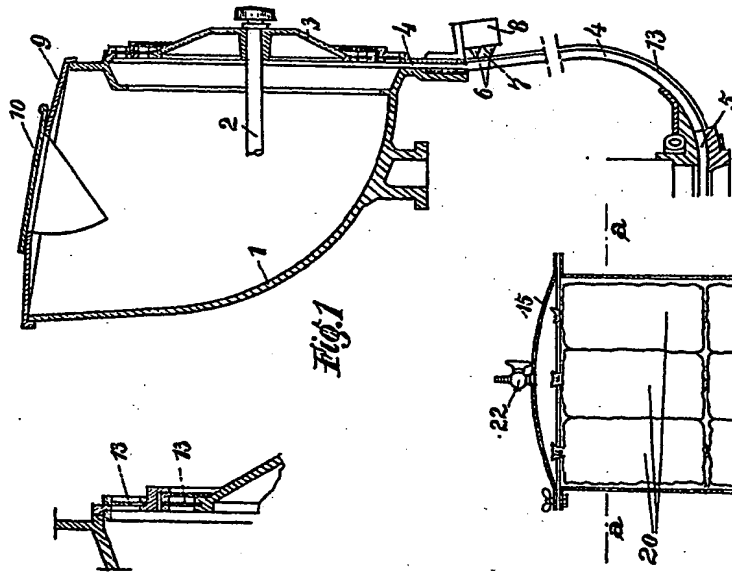


Fig. 5

2 SHEETS
SHEET 2

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